AMENDMENTS TO THE CLAIMS

1-59. (Canceled)

60. (Currently amended) A composite array comprising:

a substrate having a surface;

a first assay location and a second assay location on said surface, said first assay location being separated from said second assay location ~~by a distance, said distance comprising a gasket~~;

a first plurality of depressions located within said first assay location and a second plurality of depressions located within said second assay location~~, said first and second plurality of depressions formed at an end of an optical fiber bundle, wherein the depressions of said first plurality of depressions and the depressions of said second plurality of depressions are separated from each other by a distance that is less than the distance separating said first and second assay locations, and wherein said first and second plurality of depressions are configured to contain a single microsphere~~;

a first population of microspheres comprising a ~~first~~ bioactive agent, said first population of microspheres randomly distributed at said first assay location ~~such that depressions of said first plurality of depressions have a single microsphere from said first population of microspheres associated therewith~~ and at said second assay location; and

a second population of microspheres comprising ~~a second bioactive agent~~ blank microspheres, said second population of microspheres randomly distributed at said first assay location and at said second assay location ~~such that depressions of said second plurality of depressions have a single microsphere from said second population of microspheres associated therewith~~.

61-64. (Canceled)

65. (Currently amended) The composite array of claim 60, wherein said first and second assay locations are separated by a gasket ~~comprises rubber or silicon~~.

66. (Currently amended) The composite array of claim 60, wherein said ~~first bioactive agent comprises DNA~~ bioactive agent comprises a nucleic acid.

67. (Previously presented) The composite array of claim 60, wherein said substrate comprises a microscope slide.

68. (Previously presented) The composite array of claim 60, wherein said substrate is enclosed within a hybridization chamber.

69. (Previously presented) The composite array of claim 68, wherein said hybridization chamber comprises a flexible membrane.

70. (Previously presented) The composite array of claim 60, wherein said first and second assay locations are separately enclosed within a first and a second hybridization chamber.

71. (Currently amended) A method of making a composite array comprising:

providing a substrate having a surface;

providing a first assay location and a second assay location on said surface, wherein said first assay location comprises a first plurality of depressions and said second assay location comprises a second plurality of depressions, and wherein said first assay location ~~being~~ is separated from said second assay location ~~by a distance, said distance comprising a gasket~~;

~~forming a first plurality of depressions at said first assay location and forming a second plurality of depressions as said second assay location, said first and second plurality of depressions formed at an end of an optical fiber bundle, wherein the depressions of said first plurality of depressions and the depressions of said second plurality of depressions are separated from each other by a distance that is less than the distance separating said first and second assay locations, and wherein said first and second plurality of depressions are configured to contain a single microsphere;~~

distributing randomly at said first assay location and at said second assay location, a first population of microspheres comprising a first bioactive agent ~~such that depressions of said first plurality of depressions have a single microsphere from said first population of microspheres associated therewith~~; and

distributing randomly at said first assay location and at said second assay location, a second population of microspheres ~~comprising a second bioactive agent such that depressions of said second plurality of depressions have a single microsphere from said second population of microspheres associated therewith~~ comprising blank microspheres.

72-75. (Canceled)

76. (Currently amended) The method of claim 71, wherein said first and second assay locations are separated by a gasket ~~comprises rubber or silicon~~.

77. (Currently amended) The method of claim 71, wherein said ~~first bioactive agent comprises DNA~~ bioactive agent comprises a nucleic acid.

78. (Previously presented) The method of claim 71, wherein said substrate comprises a microscope slide.

79. (Previously presented) The method of claim 71, wherein said substrate is enclosed within a hybridization chamber.

80. (Previously presented) The method of claim 79, wherein said hybridization chamber comprises a flexible membrane.

81. (Previously presented) The method of claim 71, wherein said first and second assay locations are separately enclosed within a first and a second hybridization chamber.

82. (Previously presented) The method of claim 71, wherein said plurality of first depressions is a plurality of wells.

83. (Currently amended) A composite array comprising:

a substrate having a surface, said surface having depressions located thereon, wherein every depression on said surface ~~contains~~ either ~~one~~ comprises a microsphere comprising a nucleic acid or ~~no~~ lacks a microsphere comprising a nucleic acid;

a first assay location and a second assay location on said surface, said first assay location being separated from said second assay location ~~by a distance, said distance comprising a gasket~~;

a first plurality of depressions located within said first assay location and a second plurality of depressions located within said second assay location, ~~said first and second plurality of depressions formed at an end of an optical fiber bundle, wherein the depressions of said first plurality of depressions and the depressions of said second plurality of depressions are separated from each other by a distance that is less than the distance separating said first and second assay locations~~;

a first population of microspheres comprising ~~a first~~ bioactive agent, said first population of microspheres randomly distributed at said first assay location ~~such that~~

~~depressions of said first plurality of depressions have a single microsphere from said first population of microspheres contained therein~~ and at said second assay location; and

a second population of microspheres comprising ~~a second bioactive agent~~ blank microspheres, said second population of microspheres randomly distributed at said first assay location and at said second assay location ~~such that depressions of said second plurality of depressions have a single microsphere from said second population of microspheres contained therein~~.

84-87. (Canceled)

88. (Currently amended) The composite array of claim 83, wherein said first and second assay locations are separated by a gasket ~~comprises rubber or silicon~~.

89. (Currently amended) The composite array of claim 83, wherein said ~~first bioactive agent comprises DNA~~ comprises a nucleic acid.

90. (Previously presented) The composite array of claim 83, wherein said substrate comprises a microscope slide.

91. (Previously presented) The composite array of claim 83, wherein said substrate is enclosed within a hybridization chamber.

92. (Previously presented) The composite array of claim 91, wherein said hybridization chamber comprises a flexible membrane.

93. (Previously presented) The composite array of claim 83, wherein said first and second assay locations are separately enclosed within a first and a second hybridization chamber.

94. (Currently amended) A method of making a composite array comprising:

providing a substrate having a surface, said surface comprising a first assay location comprising a first plurality of depressions ~~formed at an end of an optical fiber bundle~~ and a second assay location comprising a second plurality of depressions ~~formed at an end of an optical fiber bundle~~, wherein said first assay location is separated from said second assay location ~~by a distance, said distance comprising a gasket, and wherein said first and second plurality of depressions formed at an end of an optical fiber bundle, wherein the depressions of said first plurality of depressions and the depressions of said~~

~~second plurality of depressions are separated from each other by a distance that is less than the distance separating said first and second assay locations;~~

distributing randomly on said substrate, a first population of microspheres comprising a ~~genomic DNA~~ nucleic acid such that depressions of said first plurality of depressions have a single microsphere from said first population of microspheres associated therewith; and

distributing randomly on said substrate, a second population of microspheres ~~lacking a genomic DNA~~ comprising blank microspheres ~~such that depressions of said second plurality of depressions have a single microsphere from said second population of microspheres associated therewith~~.

95. (Previously presented) The method of claim 94, wherein said second plurality of depressions have microspheres from said first population of microspheres and said second population of microspheres associated therewith.

96. (Previously presented) The method of claim 94, wherein said first plurality of depressions have microspheres from said first population of microspheres and said second population of microspheres associated therewith.

97-100. (Canceled)

101. (Currently amended) The method of claim 94, wherein said first and second assay locations are separated by a gasket ~~comprises rubber or silicon~~.

102. (Previously presented) The method of claim 94, wherein said substrate comprises a microscope slide.

103. (Previously presented) The method of claim 94, wherein said substrate is enclosed within a hybridization chamber.

104. (Previously presented) The method of claim 103, wherein said hybridization chamber comprises a flexible membrane.

105. (Previously presented) The method of claim 94, wherein said first and second assay locations are separately enclosed within a first and a second hybridization chamber.

106. (Previously presented) The method of claim 94, wherein said plurality of first depressions is a plurality of wells.

107. (Currently amended) The method of claim 94 further comprising preparing said ~~genomic DNA~~ nucleic acid using an amplification process.

108. (Previously presented) The method of claim 107, wherein said amplification process comprises PCR.

109. (Currently amended) The method of claim 94 further comprising sequencing said ~~genomic DNA~~ nucleic acid .

110. (Previously presented) The method of claim 109, wherein said sequencing comprises pyrosequencing.

111. (Previously presented) The method of claim 109, wherein said sequencing comprises dideoxysequencing.

112. (Previously presented) The composition of claim 60, wherein said first population of microspheres is distributed such that depressions of said second plurality of depressions have microspheres from said first population of microspheres and said second population of microspheres associated therewith.

113. (Previously presented) The composition of claim 60, wherein said second population of microspheres is distributed such that depressions of said first plurality of depressions have microspheres from said second population of microspheres and said first population of microspheres associated therewith.

114. (Previously presented) The method of claim 71, wherein said first population of microspheres is distributed such that depressions of said second plurality of depressions have microspheres from said first population of microspheres and said second population of microspheres associated therewith.

115. (Previously presented) The method of claim 71, wherein said second population of microspheres is distributed such that depressions of said first plurality of depressions have microspheres from said second population of microspheres and said first population of microspheres associated therewith.

116. (Previously presented) The composition of claim 83, wherein said first population of microspheres is distributed such that depressions of said second plurality of depressions have microspheres from said first population of microspheres and said second population of microspheres associated therewith.

117. (Previously presented) The composition of claim 83, wherein said second population of microspheres is distributed such that depressions of said first plurality of depressions have microspheres from said second population of microspheres and said first population of microspheres associated therewith.

118-125. (Canceled)

126. (New) The composite array of claim 65, wherein said gasket comprises rubber or silicon.

127. (New) The composite array of claim 66, wherein said nucleic acid comprises portions of both single stranded and double stranded sequence.

128. (New) The method of claim 76, wherein said gasket comprises rubber or silicon.

129. (New) The method of claim 77, wherein said nucleic acid comprises portions of both single stranded and double stranded sequence.

130. (New) The composite array of claim 88, wherein said gasket comprises rubber or silicon.

131. (New) The composite array of claim 89, wherein said nucleic acid comprises portions of both single stranded and double stranded sequences.

132. (New) The method of claim 94, wherein said nucleic acid comprises portions of both single stranded and double stranded sequence.

133. (New) The method of claim 101, wherein said gasket comprises rubber or silicon.